

REMARKS/ARGUMENTS

Reconsideration is respectfully requested of the Official Action of April 19, 2006, relating to the above-identified application.

A request for a one month extension of time, together with the associated fee, is filed herewith.

Claims in the case are 1, 3 to 10 and 18 to 25.

The redundant Claims 12 and 15, as well claims dependent on those two claims, have been deleted.

The rejection of Claims 1, 3 to 10 and 18 to 25 under 35 U.S.C. § 103(a) in view of the reference of *Nagasawa, et al.*, U.S. 5,609,671 (*Nagasawa*), is traversed and reconsideration is respectfully requested.

It is an important feature of the present invention that the aqueous, colloidal, freeze-resistant and storage stable suspension contains a particular kind of carbon black which is known in the industry as "gas black". The suspension contains 2 to 30% by weight gas black having a DBP number of 40-200 ml/100g. As an optional component, the suspension can also contain up to 40% by weight of carbon black. In addition, a dispersion supporting additive, a biocide and water are present in the suspension composition. The gas black suspension is defined as having a zeta potential of less than -10mV, a surface tension of greater than 50mN/m and average particle size of less than 200nm, wherein the dispersion-supporting additive is a neutralized styrene-acrylic acid copolymer with an average molecular weight of 1000 to 20,000, having an acid value of 120-320 and which is present in the amount of 1 to 50 wt. %.

The dependent claims are directed to more specific features of the gas black suspension defined in Claim 1. As explained in the application it is known that aqueous colloidal carbon black suspensions have been used for the production of lacquers and printing inks or directly as inks for example, in inkjet printers.

A disadvantage of the known carbon black suspensions is the need to add to the suspensions in addition to the actual wetting agent to stabilize the pigment, additional auxiliary substances to improve certain properties such as degree of dispersion, storage stability at room temperature, freeze resistance and the like. See page 1, lines 15 to 19, of the application.

The problem facing the industry is the addition of these substances to the conventional carbon black suspensions restricts the flexibility of the use of the suspension due to incompatibilities.

The gas black suspension of the present application is characterized by desired properties enabling its use in the preparation of lacquers and printing inks because of its good storage stability, freeze resistance, optical density and the like.

Nagasawa discloses a conventional carbon black dispersion being stabilized by a styrene methacrylic resin. The Official Action points out that the claimed “gas black” is a kind of carbon black produced by a specific process. The Official Action reaches the conclusion that the limitation regarding “gas black” is “... merely functional language that does not lend itself to patentability.” See page 5. The Official Action alleges that “. . . it would have been obvious to one of ordinary skill in the art to recognize that all carbon black would be suitable for obtaining the carbon black dispersion of *Nagasawa* to obtain the gas black limitation being claimed.”

Also, the Official Action contends that one skilled in the art would recognize that any styrene methacrylic resin would be suitable for the invention of *Nagasawa*.

Applicants therefore understand that the Official Action takes the position that to use a gas black and a styrene-acrylic acid copolymer in place of the conventional carbon black and conventional styrene-acrylic copolymer of *Nagasawa* would have been *prima facie* obvious to a person having ordinary skill in the art at the time the invention was made.

The Official Action concludes with a statement “In order to overcome the rejection set forth, applicants must submit comparative data to show the criticality of employing the specific type of carbon black and neutralized styrene-acrylic acid copolymer of instantly claimed invention.” See page 6.

In response, applicants submit herewith evidence to show that the industry recognizes different types of carbon blacks exist and that “gas black” is recognized as a distinctive type of carbon black. In particular, references made to the German language document entitled *Die Technologie des Beschichtens – Pigmentrusse*.

A translation of the highlighted portions of that German language article is also submitted herewith showing that the gas black used in the present invention is formed from a different raw material than the raw materials used to form other carbon blacks, as for example, furnace blacks and flame blacks. It is particularly pointed out that the gas black process is not carried out in the completely closed system and therefore because of the excess air being present the gas blacks in comparison to furnace blacks have many more oxygen functional surface groups. See “C” in the translation. It should be noted that the term “soots” as used in the translation is a non-technical translation of the German word for “carbon black” so that the term “gas soots” is more correctly

referred to as a “gas black”. The translation also shows that the gas blacks have a different chemical composition than do furnace blacks as well as other blacks such as the flame blacks, see the Table 14 on the second page of the English language translation. It is clear that the industry recognizes the difference between gas blacks and other types of blacks.

In addition to the German language document, applicants submit herewith pages from the Ullmann’s Encyclopedia of Industrial Chemistry, 6th edition, volume 6 which discusses carbon black. Portions of this article are highlighted to facilitate consideration of the subject matter of the article. For example, figure 53 on page 351 shows gas black has a completely different particle size distribution than do furnace black and lamp black.

In summary, the record shows that there is a well recognized and documented distinction between furnace blacks, lamp blacks and gas blacks and that they are not interchangeable because of the difference in properties as recognized by the industry.

Attention is invited to page 353 of *Ullmann’s* which states that the oxygen content of carbon blacks is of great importance for their application and points out that the gas blacks have a much higher oxygen content than do, for example, furnace blacks and thermal blacks. This clearly indicates to a person having ordinary skill in the art that the various carbon blacks are not interchangeable for any and all purposes.

Applicants respectfully submit that the record presented herein establishes that one of ordinary skill in the art would recognize that not every carbon black would be suitable for any and all purposes and that the properties of the various types of carbon blacks are well known and described in the literature and each type of carbon black has its own specialized functions.

Also, of record herein is a declaration by one of the inventors, Mr. Gerd Tauber. Mr. Tauber explains the work that he has done to determine the difference between gas black and other carbon blacks when used in aqueous suspension. Mr. Tauber explains the formulations that he prepared were both with gas black and furnace black as well as with and without neutralized acrylic acid copolymer. Thus, the experiments and laboratory work done by applicants is consistent with and addresses the issues raised in the Official Action, namely that comparative data should be presented showing the criticality of the specific type of carbon black used herein; namely, the gas black and the neutralized styrene acrylic acid copolymer.

The formulation of the various compositions is shown in Table 5 of Mr. Tauber's declaration and it will be seen that the gas black composition of the present invention is gas black suspension 2. This composition contains the gas black as well as the particular styrene-acrylic acid copolymer (*Joncyl* '690), the biocide and the water. Note that the concentration of ingredients is identical to reference suspension number 6 but instead of the gas black reference suspension 6 used furnace black. Reference suspensions 7, 8 and 9 have no resin component. Reference suspension 10 contained gas black but a different resin not included within the scope of the claims. Reference suspension 11 had furnace black but no gas black and no resin and reference suspension 12 had the gas black and yet another different resin.

The results in Table 6 show that reference mixture 6 based on furnace black displayed a poor degree of dispersion compared to the gas black suspension according to the invention. This is shown in Figure 3 (enclosed herewith), which represents the reference mixture 6.

Reference suspensions 10 and 11 contain a different resin and did not contain the resin as defined in the claims and could not be dispersed to form the liquid pigment black suspensions as

shown in Table 6. Reference example 13 which contain the furnace black with no resin turned into a gel after a few hours and was therefore unusable.

Table 6 shows further properties and characteristics of the various reference suspensions as well as the gas black suspension according to the invention.

The results tabulated by Mr. Tauber clearly show that compositions according to the invention which contain the gas black and the styrene-acrylic copolymer displayed the ability to produce a 15% pigment black suspension with the appropriate degree of dispersion, good freeze resistance and other properties which made it a useful suspension for the formation of ink compositions. None of the reference suspensions, some of which contained the same gas black, displayed acceptable results.

Note the conclusions of Mr. Tauber, on page 6, with respect to the results shown in Table 6. The results of Table 6 show that the gas black suspension of the invention had all of the properties and characteristics of a good product. The reference suspensions 7, 8 and 9 which also contained the gas black but no resin showed poor freeze resistance. Reference suspensions 7 and 8 additionally could not form the degree of proper dispersion. Reference suspension 9 which contained the gas black but no resin demonstrated poor freeze resistance and poor surface tension.

Reference suspensions 10, 11 and 13 were not capable of forming a 15% pigment black suspension.

Reference suspension 12 did not meet the requirements for degree of dispersion, average particle size or viscosity. It also exhibited sedimentation.

The various tests are described, beginning on page 7 of Mr. Tauber's declaration, and test results are reported in Table 7. The routine tests were performed as shown on page 10 and it is clear that the tests conducted by Mr. Tauber demonstrate that compositions made without the gas black but similar in other respects to the composition of the present invention displayed poor results. Similarly compositions which contained furnace blacks and the resin as defined in the present invention exhibited poor results and compositions which contained no resin also exhibited poor results.

Consequently, applicants respectfully submit that the data demonstrates that compositions containing the gas black as defined in the present invention as well as the resin as defined in the present invention achieved the intended criteria for producing an acceptable gas black suspension which could then be used to obtain good results in the printing tests as reported on page 10.

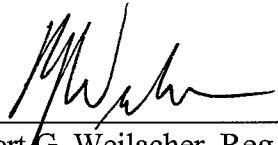
In view of the foregoing, applicants respectfully submit that the record has provided sufficient information to enable the conclusion that the claimed subject matter brings about a result which could not have been predicted from the results shown in the cited reference. A person skilled in the art after reading the *Nagasawa* reference would not be led to make the necessary selections of the components as defined in the claims with the expectation that a gas black suspension could be prepared which would exhibit excellent results when subjected to the printing tests as described herein.

For reason set forth above, it is respectfully submitted that the test data presented in this record rebut any *prima facie* obviousness of the claimed invention.

For reasons set forth above, it is respectfully requested that the rejection of the claims be withdrawn and that the application be passed to issue.

Respectfully submitted,

SMITH, GAMBRELL & RUSSELL, LLP

By: 
Robert G. Weilacher, Reg. No. 20,531

Dated: August 18, 2006
Suite 3100, Promenade II
1230 Peachtree Street, N.E.
Atlanta, Georgia 30309-3592
Telephone: (404) 815-3593
Facsimile: (404) 685-6893